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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,477	10/31/2000	Takashi Miyoshi	16787-04445	2188

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EXAMINER

WINDER, PATRICE L

ART UNIT	PAPER NUMBER
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2155

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/703,477

Applicant(s)

MIYOSHI ET AL.

Examiner

Patrice Winder

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2000.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-31 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4,5,8.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-11, 13-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drott et al., USPN 6,170,025 (hereafter referred to as Drott) in view of Brown et al., USPN 6,148,414 (hereafter referred to as Brown).

4. Regarding claim 1, Drott taught a method for communicating transaction request information from a PCI environment over a network (column 3, lines 3-9), the method comprising:

receiving a number of transaction requests from the PCI environment (column 18, lines 29-37);

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determining a destination node ID and a destination address associated with each transaction request (column 18, lines 38-42);

maintaining an order of data associated with each of the transaction requests (column 12, lines 19-22);

for each transaction request, assembling a packet including a request, a destination node ID and a destination address (column 13, lines 2-13, column 18, lines 43-52); and

transmitting the packet to the network (column 18, lines 53-54). Drottar does not specifically teach maintaining an order of the transaction requests received. However, Brown taught maintaining an order of the transaction requests received (column 17, lines 1-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made that incorporating Brown's method for maintaining for order of transaction requests in Drottar's method for communication transaction request information from a PCI environment over a network would have improved system efficiency. The motivation would have been to provide better arbitration of the transaction requests between the peer PCI devices.

5. Regarding dependent claim 2, Drottar taught the determining step includes translating the destination node ID and destination address from a PCI address space of the PCI environment (column 18, lines 38-42).

6. Regarding dependent claim 3, Drottar taught the determining step includes mapping a remote DMA space from a logical node ID included in a PCI address space of the PCI environment, the DMA space corresponding to a number of remote memory

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devices (when transaction is RDMA read or RDMA write, column 14, column 18, lines 38-42).

7. Regarding dependent claim 4, Brown taught the step of maintaining the order of the transaction requests received is accomplished using FIFO queue structures (column 17, lines 1-11). Drottar taught maintaining the order of data associated with each of the transaction requests is accomplished using FIFO queue structures (column 12, lines 19-22).

8. Regarding dependent claim 5, Drottar taught one of the transaction requests received from the PCI environment is an original read request (column 20, lines 13-15), the method further comprising:

responsive to not having received the read data associated with the original read request, issuing a retry reply to the device in response to receiving a retry of the original read request from the device thereby requiring the device to continue to retry the original read request (column 19, lines 46-49, column 20, lines 41-44); and

responsive to receiving the read data associated with the original read request, and responsive to receiving a retry of the original read request from the device, issuing the read data to the device (column 20, lines 29-32, column 20, lines 41-44).

9. Regarding dependent claim 6, Drottar taught further comprising: generating a force read retry signal that triggers the issuing of the retry reply to the device (column 20, lines 29-32, 41-44).

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10. Regarding dependent claim 7, Drottar taught further comprising: determining a number of transaction requests that have a same destination node (column 20, lines 20-24).

11. Regarding dependent claim 8, Drottar taught the determining step includes deriving the destination node ID from a node ID table, each entry in the table indexed according to a logical node ID included in a PCI address space of the PCI environment (column 18, lines 38-42).

12. Regarding claim 9, Drottar taught a method for communicating request packet information from a network to a PCI environment (abstract), the method comprising:

receiving a number of a request packets from the network (column 17, lines 63-67); for each request packet, identifying a request, a destination node ID and a destination address associated with the packet (column 18, lines 1-6);

maintaining an order of data associated with each of the request packets received (column 13, lines 2-13, column 18-lines 53-54); and

for each request packet, processing the associated request (column 18, lines 7-13). Drottar does not specifically teach maintaining an order of the requests associated with each of the request packets received. However, Brown taught maintaining an order of the requests associated with each of the request packets received (column 17, lines 1-11). For motivation for combination see claim 1, above.

13. Regarding dependent claim 10, Brown taught the step of maintaining the order of the requests is accomplished using FIFO queue structures (column 17, lines 1-11).

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Drottar taught maintaining the order of data associated with each of the requests is accomplished using FIFO queue structures (column 12, lines 19-22).

14. Regarding dependent claim 11, Brown taught the steps of maintaining the order of the requests and maintaining the order of data are accomplished using a first FIFO queue structure for read data, a second FIFO queue structure for write data and a third FIFO queue structure for the requests (column 17, lines 1-11).

15. Regarding dependent claim 13, Drottar taught further comprising: responsive to receiving a read request packet, receiving read data from the PCI environment (column 20, lines 36-40);

assembling that read data into a read reply packet; and transmitting the read reply packet over the network (column 20, lines 41-44).

16. Regarding dependent claim 14, Drottar taught the processing step includes executing a PCI command corresponding to the request (column 18, lines 7-13).

17. Regarding dependent claim 15, Drottar taught the corresponding PCI command is one of a read command, a write command or a status inquiry command (column 18, lines 7-13).

18. The language of claims 16-22 and 25 is substantially the same as previously rejected claims 1-5. Therefore, claims 16-22 and 25 are rejected on the same rationale as previously rejected claims 1-5.

19. Regarding dependent claim 23, Drottar taught in response to the read data associated with the original read request not having been received by the transfer unit (Figure 9 performed for each received request, retry requests included), the transfer unit

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signals the interface with a force read retry signal that indicates to the interface that the transfer unit has not received the read data associated with the original read request (column 19, lines 46-49, column 20, lines 27-32), the force read retry signal causing the interface to issue a retry reply to the device in response to receiving a retry of the original read request from the device thereby requiring the device to continue to retry the original read request (column 20, lines 29-32, 41-44).

20. Regarding dependent claim 24, Drottar taught in response to the read data associated with the original read request having been received by the transfer unit, the transfer unit signals the interface by suppressing the force read retry signal thereby indicating to the interface that the transfer unit has received the read data associated with the original read request (read retry not issued, column 20, lines 24-40).

21. The language of claims 26-31 is substantially the same as previously rejected claims 9-15. Therefore, claims 26-31 are rejected on the same rationale as previously rejected claims 9-15.

22. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Drottar and Brown as applied to claim 9 above, and further in view of Gandhi et al., USPN 6,243,781 B1 (hereafter referred to as Gandhi).

23. Regarding dependent claim 12, Drottar-Brown does not specifically teach responsive to a read request packet and a write request packet both having a same destination node ID, processing the write request packet before processing the read request packet. Gandhi taught a method for preventing deadlocks comprising responsive to a read request packet and a write request packet both having a same

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destination node ID, processing the write packet before processing the read request packet (column 3, lines 48-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made that incorporating Gandhi's method of preventing deadlocks in Drottar-Brown's system for transmitting PCI information across the network would have improved system efficiency. The motivation would have been to provide another mechanism of preventing deadlocks.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wooten, USPN 5,621,898: taught a serial bus host controller, that organizes data transfer events into three categories, periodic data transfers, which are usually isochronous transfers; a periodic transfers, which are asynchronous transfers and control transfer and arbitrates between the types of transfers;

Hong, USPN 5,764,924: taught a method and apparatus for extending a PCI bus interface to a remote I/O backplane through a high speed serial link; the apparatus includes a local serial bridge coupled to a remote serial bridge through the serial link; each serial bridge is on a PCI card;

Duong et al., USPN 6,487,628 B1: taught a ServerNet is a System Area Network which can employ two switch interconnect fabrics in a packet switch; a plurality of peripheral components are connected to one end node of the ServerNet through a peripheral component interface (PCI) through a plurality of independent channels; and


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Batchelor et al., USPN 6,502,157 B1: taught is a bridge system and method for prefetching data to return to a read request from an agent utilizing a first buffer for storing prefetch requests and a second buffer for storing read data.

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrice Winder whose telephone number is (703) 305-3938. The examiner can normally be reached on Monday-Friday from 10:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam, can be reached on (703) 308-6662. The fax phone number for this Group is official (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.


PATRICE WINDER
PRIMARY EXAMINER